

Oregon Department of Agriculture
Noxious Weed Pest Risk Assessment for
Lesser Celandine
Ranunculus ficaria L.
Ranunculaceae
February 2016

Findings of Review and Assessment: Lesser celandine meets the criteria of a “B ” listed noxious weed as defined by the ODA Noxious Weed Policy and Classification System. This determination is based on two independent risk assessments following a literature review. Using a rating system adapted from USDA-APHIS Weed Risk Assessment Guidelines, lesser celandine scored 48 out of a potential score of 89. Using the ODA Noxious Weed Rating system, lesser celandine scored 12.

Introduction: Planted originally as an ornamental, lesser celandine escaped cultivation and now has spread throughout the Northeast, Midwest and the Pacific Northwest states. The bloom period for this species runs early March through May starting well before leaf formation in deciduous forests. Monotypic stands are formed under forest canopies pushing out native understory plants. Lesser celandine is frequently found in many north-east states where it has escaped from gardens and has invaded surrounding deciduous forests. The species is currently found in 19 states and reported invasive in 9. Some National Parks in the eastern U.S are host to Lesser celandine outbreaks. Infestations in the western states are mostly limited to urban parks and private yards where plantings have grown out of control.

Reproduction: The primary asexual reproductive method results from the formation of turions, produced on the roots in large numbers. They survive for years and are easily moved in contaminated dirt or by water. Seeds may also play a significant role in plant reproduction. Humans are playing a critical role in dispersing the plant, through nursery plantings into flower gardens an parks. Green or partially digested commercial compost is also suggested as having a role in turion dispersal. Illegal dumping of yard debris also plays a role in plant movement to public forests nationwide.

Lesser celandine flower and infestation



Factors Effecting Establishment: Lesser celandine has a broad ecological amplitude and may only be limited by very low humidity and excessive summer dryness. As long as there is early-season long soil moisture, establishment is not hampered. Excessive shade in conifer forests may limit establishment though. No noticeable herbivory by insects or animals is noted. The plant in suitable habitat in Western Oregon expresses its full reproductive potential.

Probability of Detection: Lesser celandine is very showy in the spring and often confused with marsh marigold. Homeowners frequently share the plant around a neighborhood only to regret the plantings later. By mid summer, all plant parts have receded back and are not noticeable.

Distribution in Oregon: Small populations are mostly located in the larger Willamette Valley communities of Portland, Salem and Eugene-Springfield where it most infests yards and parks. A 5 acre infestation in Wilsonville was converted into a city park. This was the largest known infestation in Oregon.

Environmental Impacts: Lesser celandine has a broad ecological amplitude and may only be limited by very low humidity and excessive summer dryness. As long as there is early-season long soil moisture, establishment is not hampered. Excessive shade in conifer forests may limit establishment though. No noticeable herbivory by insects or animals is noted. The plant in suitable habitat in Western Oregon expresses its full reproductive potential.

Economic Impacts: This species can alter the forest ecosystem by forming dense mono-typic patches leading to the exclusion of most low-growing forbs especially early-blooming native wildflowers. To the private landowner or gardener, lesser celandine escaping from plantings quickly overwhelms flowerbeds and lawns (Authors note). Contaminated garden loam applied to new lawns can create problems in a few short years. Because of the bulbous nature of the root system, control can be difficult. Bulb fragments are easily overlooked during manual control, leading to re-infestation. Chemical control must be timed for optimal kill but the nonselective nature of certain herbicides can lead to non-target impacts on desirable plants. Cultivars of lesser celandine continue to be sold through catalogs and nurseries nationwide. Celandine has traditionally been used in old Europe as a tonic for “piles” a hemorrhoid ailment (Botanical.com). Hence the name “pilewort”.

Control: Glyphosate applied during early bloom offers the best solution for larger patches. Very small patches may be dug. Mowing and tillage are more detrimental than helpful. Other phenoxy based herbicide products are registered in landscapes and lawns may be useful to homeowners and park managers.

Noxious Weed Qualitative Risk Assessment 3.8
Oregon Department of Agriculture

Common Name: Lesser celandine
Scientific Name: *Ranunculus ficaria*
Family: Ranunculaceae

For use with plant species that occur or may occur in Oregon to determine their potential to become serious noxious weeds. For each of the following categories, select the number that best applies. Numerical values are weighted to increase priority categories over less important ones. Choose the best number that applies, intermediate scores can be used.

Total Score: **48** Risk Category: **B**

GEOGRAPHICAL INFORMATION

- 1) **6** **Invasive in Other Areas**
0 Low- not known to be invasive elsewhere.
2 Known to be invasive in climates dissimilar to Oregon's current climates.
6 Known to be invasive in geographically similar areas.
Comments: Species is invasive in a wide range of climates with available moisture.
- 2) **6** **Habitat Availability:** Are there susceptible habitats for this species and how common or widespread are they in Oregon?
1 *Low* – Habitat is very limited, usually restricted to a small watershed or part of a watershed (e.g., tree fern in southern Curry County).
3 *Medium* – Habitat encompasses 1/4 or less of Oregon (e.g., oak woodlands, coastal dunes, eastern Oregon wetlands, Columbia Gorge).
6 *High* – Habitat covers large regions or multiple counties, or is limited to a few locations of high economic or ecological value (e.g., threatened and endangered species habitat).
Comments: Much of western Oregon is susceptible to celendine invasion. May easily invade pine forests also.
- 3) **0** **Proximity to Oregon:** What is the current distribution of the species?
0 *Present* – Occurs within Oregon.
1 *Distant* – Occurs only in distant US regions or foreign countries.
3 *Regional* – Occurs in Western regions of US but not adjacent to Oregon border.
6 *Adjacent* – Weedy populations occur adjacent (<50 miles) to Oregon border.
Comments: Occurs in western Oregon.
- 4) **8** **Current Distribution:** What is the current distribution of escaped populations in Oregon?
0 *Not present* – Not known to occur in Oregon.
1 *Widespread* – Throughout much of Oregon (e.g., cheatgrass).
5 *Regional* – Abundant (i.e., occurs in eastern, western, central, coastal, areas of Oregon) (e.g., gorse, tansy ragwort).
10 *Limited* – Limited to one or a few infestations in state (e.g., kudzu).
Comments: Populations still limited throughout western Oregon.

BIOLOGICAL INFORMATION

- 5) **4** **Environmental Factors:** Do abiotic (non-living) factors in the environment effect establishment and spread of the species? (e.g., precipitation, drought, temperature, nutrient availability, soil type, slope, aspect, soil moisture, standing or moving water).
- 1 *Low* – Severely confined by abiotic factors.
 - 2 *Medium* – Moderately confined by environmental factors
 - 4 *High* – Highly adapted to a variety of environmental conditions (e.g., tansy ragwort, Scotch broom).

Comments: Highly adaptable species when adequate moisture is available.

- 6) **6** **Reproductive Traits:** How does this species reproduce? Traits that may allow rapid population increase both on and off site.
- 0 *Negligible* – Not self-fertile, or is dioecious and opposite sex not present.
 - 1 *Low* – Reproduction is only by seed, produces few seeds, or seed viability and longevity are low.
 - 3 *Medium* – Reproduction is vegetative (e.g., by root fragments, rhizomes, bulbs, stolons).
 - 3 *Medium* – Produces many seeds, and/or seeds of short longevity (< 5 years).
 - 5 *High* – Produces many seeds and/or seeds of moderate longevity (5-10 years) (e.g., tansy ragwort).
 - 6 *Very high* – Has two or more reproductive traits (e.g., seeds are long-lived >10 years and spreads by rhizomes).

Comments: Reproduces well with seeds and turions.

- 7) **4** **Biological Factors:** Do biotic (living) factors restrict or aid establishment and spread of the species? (What is the interaction of plant competition, natural enemies, native herbivores, pollinators, and pathogens with species?)
- 0 *Negligible* – Host plant not present for parasitic species.
 - 1 *Low* – Biotic factors highly suppress reproduction or heavily damage plant for an extended period (e.g., biocontrol agent on tansy ragwort).
 - 2 *Medium* – Biotic factors partially restrict or moderately impact growth and reproduction, impacts sporadic or short-lived.
 - 4 *High* – Few biotic interactions restrict growth and reproduction. Species expresses full growth and reproductive potential.

Comments: Species expresses full growth and reproductive potential.

- 8) **3** **Reproductive Potential and Spread After Establishment - Non-human Factors:** How well can the species spread by natural means?
- 0 *Negligible* – No potential for natural spread in Oregon (e.g., ornamental plants outside of climate zone).
 - 1 *Low* – Low potential for local spread within a year, has moderate reproductive potential or some mobility of propagules (e.g., propagules transported locally by animals, water movement in lakes or ponds, not wind blown).
 - 3 *Medium* - Moderate potential for natural spread with either high reproductive potential or highly mobile propagules (e.g., propagules spread by moving water, or dispersed over longer distances by animals) (e.g., perennial pepperweed).
 - 5 *High* – Potential for rapid natural spread throughout the susceptible range, high reproductive capacity and highly mobile propagules. Seeds are wind dispersed over large areas (e.g., rush skeletonweed).

Comments: Moderate potential for spread by water or animals.

- 9) **3** **Potential of Species to be Spread by Humans.** What human activities contribute to spread of species? Examples include: interstate or international commerce; contaminated commodities; packing materials or products; vehicles, boats, or equipment movement; logging or farming; road maintenance; intentional introductions of ornamental and horticultural species, or biofuel production.
- 1 *Low* – Potential for introduction or movement minimal (e.g., species not traded or sold, or species not found in agricultural commodities, gravel or other commercial products).
 - 3 *Medium* – Potential for introduction or off-site movement moderate (e.g., not widely propagated, not highly popular, with limited market potential; may be a localized contaminant of gravel, landscape products, or other commercial products) (e.g., lesser celandine, Canada thistle).
 - 5 *High* – Potential to be introduced or moved within state high (e.g., species widely propagated and sold; propagules common contaminant of agricultural commodities or commercial products; high potential for movement by contaminated vehicles and equipment, or by recreational activities) (e.g., butterfly bush, spotted knapweed, Eurasian watermilfoil).

Comments: Moderate potential for spread by humans in nursery trade or contaminated materials.

IMPACT INFORMATION

- 10) **1** **Economic Impact:** What impact does/can the species have on Oregon's agriculture and economy?
- 0 *Negligible* – Causes few, if any, economic impacts.
 - 1 *Low* - Potential to, or causes low economic impact to agriculture; may impact urban areas (e.g., puncture vine, pokeweed).
 - 5 *Medium* – Potential to, or causes moderate impacts to urban areas, right-of-way maintenance, property values, recreational activities, reduces rangeland productivity (e.g., English ivy, Himalayan blackberry, cheatgrass).
 - 10 *High* – Potential to, or causes high impacts in agricultural, livestock, fisheries, or timber production by reducing yield, commodity value, or increasing production costs (e.g., gorse, rush skeleton weed, leafy spurge).

Comments: Can impact parks and urban landscapes.

- 11) **3** **Environmental Impact:** What risks or harm to the environment does this species pose? Plant may cause negative impacts on ecosystem function, structure, and biodiversity of plant or fish and wildlife habitat; may put desired species at risk.
- 0 *Negligible* – None of the above impacts probable.
 - 1 *Low* – Can or does cause few or minor environmental impacts, or impacts occur in degraded or highly disturbed habitats.
 - 4 *Medium* – Species can or does cause moderate impacts in less critical habitats (e.g., urban areas, sagebrush/ juniper stands).
 - 6 *High* – Species can or does cause significant impacts in several of the above categories. Plant causes severe impacts to limited or priority habitats (e.g., aquatic, riparian zones, salt marsh; or T&E species sites).

Comments: Can become dominant in deciduous forest understories. Alters forest floor communities.

- 12) 0 **Impact on Health:** What is the impact of this species on human, animal, and livestock health? (e.g., poisonous if ingested, contact dermatitis, acute and chronic toxicity to livestock, toxic sap, injurious spines or prickles, causes allergy symptoms).
- 0 *Negligible* – Has no impact on human or animal health.
 - 2 *Low* – May cause minor health problems of short duration, minor allergy symptoms (e.g., leafy spurge).
 - 4 *Medium* – May cause severe allergy problems, death or severe health problems through chronic toxicity, spines or toxic sap may cause significant injury. (e.g., giant hogweed, tansy ragwort).
 - 6 *High* – Causes death from ingestion of small amounts, acute toxicity (e.g. poison hemlock).

Comments: No impact.

CONTROL INFORMATION

- 13) 1 **Probability of Detection at Point of Introduction:** How likely is detection of species after introduction and naturalization in Oregon?
- 1 *Low* – Grows where probability of early detection is high, showy and easily recognized by public; access to habitat not restricted (e.g., giant hogweed).
 - 5 *Medium* – Easily identified by weed professionals, ranchers, botanists; some survey and detection infrastructure in place. General public may not recognize or report species (e.g., leafy spurge).
 - 10 *High* – Probability of initial detection by weed professionals low. Plant shape and form obscure, not showy for much of growing season, introduction probable at remote locations with limited access (e.g., weedy grasses, hawkweeds, skeletonweed).

Comments: Plant showy, often found in urban areas.

- 14) 3 **Control Efficacy:** What level of control of this species can be expected with proper timing, herbicides, equipment, and biological control agents?
- 1 *Negligible* – Easily controlled by common non-chemical control measures (e.g., mowing, tillage, pulling, and cutting; biocontrol is very effective at reducing seed production and plant density) (e.g., tansy ragwort).
 - 2 *Low* – Somewhat difficult to control, generally requires herbicide treatment (e.g., mechanical control measures effective at preventing flowering and but not reducing plant density; herbicide applications provide a high rate of control in a single application; biocontrol provides partial control).
 - 4 *Medium* – Treatment options marginally effective or costly. Tillage and mowing increase plant density (e.g., causes tillering, rapid regrowth, spread from root fragments). Chemical control is marginally effective. Crop damage occurs or significant non-target impacts result from maximum control rates. Biocontrol agents are ineffective.
 - 6 *High* – No effective treatments known or control costs very expensive. Species may occur in large water bodies or river systems where containment and complete control are not achievable. Political or legal issues may prevent effective control.

Comments: Somewhat difficult to control. Herbicide generally required.

Category Scores:

20 Geographic score (Add scores 1-4)

20 Biological Score (Add lines 5-9)

4 Impact Score (Add lines 10-12)

4 Control Score (Add Lines 13-14)

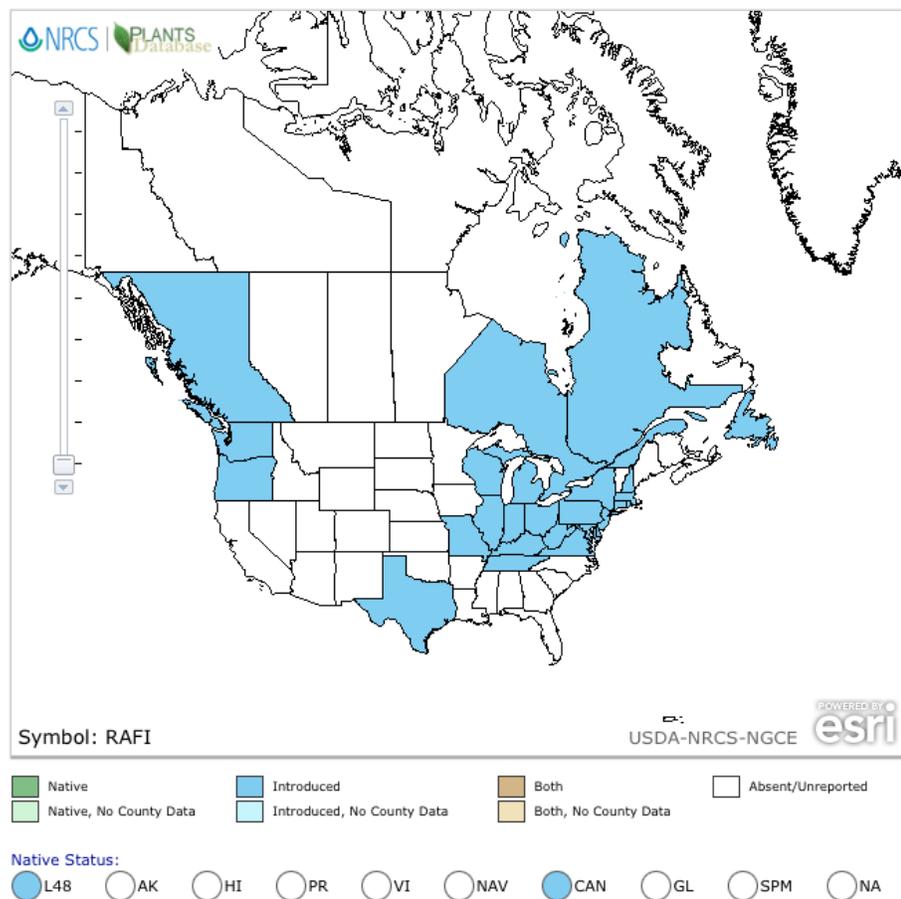
48 Total Score (Add scores 1-14 and list on front of form)

Risk Category: 55-89 = A 24-54 = B < 24 = unlisted.

This Risk Assessment was modified by ODA from the USDA-APHIS Risk Assessment for the introduction of new plant species.

V3.8 2/19/2016

US distribution of lesser celandine



Oregon Department of Agriculture
Noxious Weed Rating System

Common Name: Lesser celandine, fig buttercup

Scientific Name: *Ranunculus ficaria*

Point Total: **12**

Rating: **B**

1) Detrimental Effects: Check all that apply, enter number of checks

- 1. *Health*: causes poisoning or injury to humans or animals
- 2. *Competition*: strongly competitive with crops, forage, or native flora
- 3. *Host*: host of pathogens and/or pests of crops or forage
- 4. *Contamination*: causes economic loss as a contaminate in seeds and/or feeds
- 5. *Interference*: interferes with recreation, transportation, harvest, land value, or wildlife and livestock movement

2) Reproduction & Capacity for Spread: Check the number that best describes, enter that number

- 1. Few seeds, not wind blown, spreads slowly
- 2. Many seeds, slow spread
- 3. Many seeds, spreads quickly by vehicles or animals
- 4. Windblown seed, or spreading rhizomes, or water borne
- 5. Many wind-blown seeds, high seed longevity, spreading rhizomes, perennials

3) Difficulty to Control: Check the number that best describes, enter that number

- 1. Easily controlled with tillage or by competitive plants
- 2. Requires moderate control, tillage, competition or herbicides
- 3. Herbicides generally required, or intensive management practices
- 4. Intensive management generally gives marginal control
- 5. No management works well, spreading out of control

4) Distribution: Check the number that best describes, enter that number

- 1. Widely distributed throughout the state in susceptible habitat
- 2. Regionally abundant, 5 or more counties, more than 1/2 of a county
- 3. Abundant throughout 1- 4 counties, or 1/4 of a county, or several watersheds
- 4. Contained in only 1 watershed, or less than 5 square miles gross infestation
- 5. Isolated infestation less than 640 acres, more than 10 acres

5) Ecological Impact: Check the number that best describes, enter that number

- 1. Occurs in most disturbed habitats with little competition
- 2. Occurs in disturbed habitats with competition
- 3. Invades undisturbed habitats and crowds out native species
- 4. Invades restricted habitats (i.e. riparian) and crowds out native species

12

TOTAL POINTS

Note: Noxious weeds are non-native plants with scores of 11 points or higher. Any plants in 4.1, 4.2, and 4.3 should not be classified as “A” rated weeds. *Ratings:* 16+ = A, 15 – 11 = B

ODA Weed Rating System 2/22/16 V3.8

References:

Jil M. Swearingen, Plant Conservation Alliance, Alien Plant Working Group.
National Park Service, National Capital Region, Center for Urban Ecology, Washington, DC.

Swearingen, J. 2004. WeedUS: Database of Invasive Plants of Natural Areas in the U.S. (in progress). <http://www.nps.gov/plants/alien>.

Forney T., Miller G. Oregon Department of Agriculture. Field observations and conversations.

Botanical.com. Lesser celandine. Found at www.botanical.com/botanical/mgmh/c/celles44.html

USDA Plants database: *Ranunculus ficaria* <http://plants.usda.gov/core/profile?symbol=RAFI>

Reported by: Glenn Miller, ODA

USDA Plant hardiness zone

